Mycological Bulletin

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EDITOR'S NOTES.

SETTLED.—The prolonged consideration of the postal status of the BULLETIN is happily terminated as the second-class entry note on the cover indicates. We had always considered our matter *second class* but the authorities were disposed to rate it higher! But the red tape has all been unwound and we can mail the BULLETIN hereafter without embarassment.

FIGURES AND TEXT.—Some variation in matter as well as illustrations will be seen—for example we have drawn on Professor Atkinson's excellent book for a note on the uses of Mushrooms; then the peculiar growths on the common Hackberry tree are illustrated—where a fungus (though not called a Mushroom) is concerned as one of the causes.

THE FUNGUS OF THE HACKBERRY BRANCH-KNOT.—The Witches' Brooms, as they may be called, which are so common on the Hackberry tree, illustrated in Figs. 193 and 194, are caused by a mite (of the genus *Phy-top-tus*) and a Leaf-Mildew fungus associated. The distortion consists of multiplied branchlets due to the irritation of the two organisms. The explanation under the cuts (especially under Fig. 192) is perhaps all that is needed at present.

AN INTERESTING CORDYCEPS.

M. E. Hard.

CORDYCEPS is from a Greek word meaning a club and a Latin word meaning a head. This is a genus of Pyrenomycetous fungi of which a few grow upon other fungi and grasses but by far the greater number are parasitic upon insects or their larva. The larva stage suffers most frequently from the parasitic fungi.

There are two species of Cordyceps found in the woods or wooded places of great interest to the mycologist. They are parasitic on Elaphomyces which are truffle-like growths found in soils. They are Cordyceps ophioglossoides, Adder's Tongue Cordyceps and Cordyceps capitata. The potato-like growth upon which they are found and the form of the fruiting body as indicated by their specific names, will clearly identify them.

Plant lice and flies suffer from attacks of fungi. The common house fly will frequently be seen hanging to the window pane surrounded by a visible halo of fungus spores which have been thrown from the fungus sacs and caught on the glass. A great portion of which were thrown into the

air where they float about until they come into contact with other flies. When a spore comes in contact with a healthy fly a fungus thread is produced which soon makes its way to the inside and continues to branch and grow till it kills the fly when it comes to the surface and forms a new crop of spores.

One of the most interesting group of parasitic fungi are the beetle fungi. They are extremely small and can only be seen by a strong lens. They are found on the legs of the water beetles and usually found on a certain joint of one leg. This localization is accounted for on the ground that plant sexes are often formed on different plants so sexual cells of fungi may be brought in contact by the breeding acts of the insects.

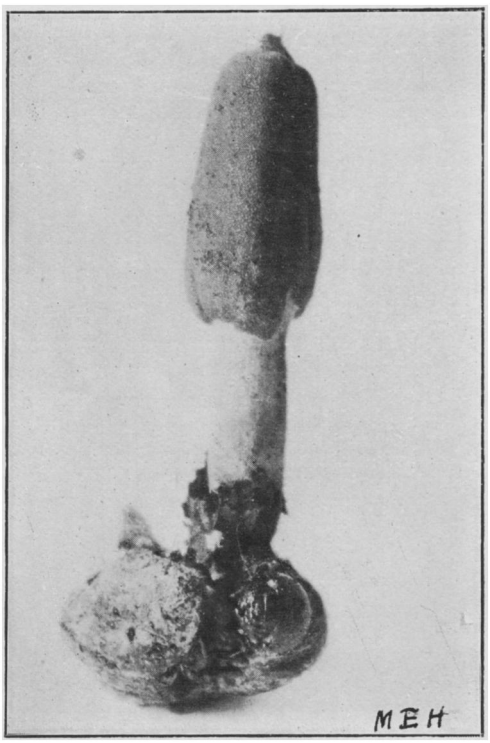

Fig. 190. COR'-DY-CEPS HER-CU'-LE-A. GIANT CATERPILLAR FUNGUS. See text for explanation. M. E. Hard, Chillicothe, Ohio.

The caterpillar fungus is the most common and presents many interesting features because of its ability to produce a variety of spores, each specialized for a definite purpose. Spores may be produced upon fruiting bodies similar to figure 190. As soon as a spore falls upon a caterpillar it germinates, sending out germ-threads in the body cavity. Here these germ-threads form new spores which move freely in the fluid of the caterpillar. These spores germinate until the entire body cavity and muscle fiber are thoroughly permeated by mycelium threads. These threads continue to branch and grow until they have absorbed all the larva's soft parts, retaining not only the external form of the caterpillar but also the internal form of

its organs. It is a complete fac-simile of the larva made up of fungus growth. This may be called a resting or storage organ. This requires time to ripen. It may send up an orange-colored club-shaped body as in figure 190 or it may produce a dense growth of threads resembling a small ball of cotton and from these threads another kind of spores is produced. This new kind of spore affects the larva in the same way as the kind already described. The caterpillar will continue to move sluggishly for some distance after it has been thus infected. The caterpillar fungus is of great economic value for thousands of larvae are killed in this way every year.

One of the largest forms of the caterpillar fungi is COR'-DY-CEPS HER-CU'-LE-A Schw. An excellent representation is given in the half tone. figure 190. It is called *herculea* because of its large size. The species can be readily identified from this cut. It grows from the body of a large white grub found on rotten wood. A perfect form of the grub is retained yet every bit of the larva has been coverted into fungus starch for storage material.

The plant is quite large, clavate in form, head oblong, round, slightly tapering upward with a decided protuberance at the apex as will be seen in the half tone. The head is a light yellow in all specimens I found, not alutaceous as Schweinitz states, nor is the head obtuse. They are found in August and September.

USE OF MUSHROOMS.

Geo. F. Atkinson, Cornell University.

Another very favorable indication accompanying the increasing interest in the study of these plants, is the recognition of their importance as objects for nature study. There are many useful as well as interesting lessons taught by mushrooms to those who stop to read their stories. The long growth period of the spawn in the ground, or in the tree trunk, where it may sometimes be imprisoned for years, sometimes a century, or more, before the mushroom appears, is calculated to dispel the popular notion that the mushroom "grows in the night." Then from the button stage to the ripe fruit, several days, a week, a month, or a year may be needed, according to the kind, while some fruiting forms are known to live from several to eighty or more years. The adjustment of the fruit cap to a position most suitable for the scattering of the spores, the different ways in which the fruit cap opens and expands, the different forms of the fruit surface, their colors and other peculiarities, suggest topics for instructive study and observation. The inclination, just now becoming apparent, to extend nature study topics to include mushrooms is an evidence of a broader and more sympathetic attitude toward nature.

A little extension of one's observation on the habits of these plants in